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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/626,363

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EXAMINER

LI, SHI K

ART UNIT

PAPER NUMBER

2613

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/10/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/626,363

Applicant(s)

HOANG ET AL.

Examiner

Shi K. Li

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/6/2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-5, 8, 10-11, 14, 16-19, 21-22, 24-26, 28 and 30 are rejected under 35

U.S.C. 102(a) as being anticipated by Ho et al. (P. Ho et al., "A Novel Distributed Control Protocol in Dynamic Wavelength-Routed Optical Networks", IEEE Communications Magazine, November 2002).

Regarding claims 1 and 10, Ho et al. teaches dynamic wavelength routing in optical network. Ho et al. teaches in FIG. 1a a network with a plurality of nodes. Ho et al. teaches on page 39, right col. partially adaptive routing wherein each source node is provided with a routing table (equivalent to network topology database of instant claim), in which paths to all its destinations are stored. When a connection request arrives, the source node selects a path from all the available ones from a routing table. Ho et al. teaches on page 38, right col., last paragraph wavelength continuity constraint for each lightpath.

Regarding claims 2-3, Ho et al. teaches on page 38, right col., last paragraph lightpath.

Regarding claim 4, Ho et al. teaches on page 38, right col., last paragraph wavelength continuity constraint for each lightpath, that is, the lightpath is conversion free.

Regarding claims 5 and 11, Ho et al. teaches dynamic path selection.

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Regarding claims 8 and 14, Ho et al. teaches on page 39, right col., second paragraph methods for updating the routing table.

Regarding claim 16, Ho et al. teaches on page 39, left col., last paragraph that routing table contains prescheduled paths for each source-destination pair where source denotes the local access node. Topology databases of two access nodes are different because they contain paths with different source nodes.

Regarding claims 17-18, Ho et al. teaches on page 38, right col., last paragraph lightpath.

Regarding claim 19, Ho et al. teaches dynamic path selection.

Regarding claim 21, Ho et al. teaches on page 39, right col., second paragraph methods for managing the link state.

Regarding claim 22, Ho et al. teaches on page 39, right col., second paragraph methods for updating the routing table.

Regarding claim 24, Ho et al. teaches in FIG. 3 that the database includes the status of each wavelength.

Regarding claim 25, Ho et al. teaches on page 39, right col., second paragraph that each node maintains link status.

Regarding claim 26, Ho et al. teaches dynamic path selection.

Regarding claim 28, Ho et al. teaches on page 39, right col., second paragraph methods for updating the routing table.

Regarding claim 30, Ho et al. teaches on page 39, right col., second paragraph that each node maintains link status.

Claim Rejections - 35 USC § 103

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3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6-7, 12-13, 20 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ho et al. (P. Ho et al., "A Novel Distributed Control Protocol in Dynamic Wavelength-Routed Optical Networks", IEEE Communications Magazine, November 2002) in view of Golmie et al. (N. Golmie et al., "A Differentiated Optical Services Model for WDM Networks", IEEE Communications Magazine, February 2000).

Ho et al. has been discussed above in regard to claims 1-5, 8, 10-11, 14, 16-19, 21-22, 24-25, 26, 28 and 30. The difference between Ho et al. and the claimed invention is that Ho et al. does not teach dividing optical network into QoS levels. Golmie et al. teaches in FIG. 3 and Table 1 to divide optical links into channels according to a plurality of service levels. One of ordinary skill in the art would have been motivated to combine the teaching of Golmie et al. with the WDM network of Ho et al. because different service levels fulfill different customer needs. For example, certain customers are willing to pay premier charge for high quality service. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to divide the network into a plurality of service levels, as taught by Golmie et al., in the WDM network of Ho et al. because different service levels fulfill different customer needs.

5. Claims 9, 15, 23 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ho et al. (P. Ho et al., "A Novel Distributed Control Protocol in Dynamic Wavelength-Routed

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Optical Networks", IEEE Communications Magazine, November 2002) in view of Pulkkinen et al. (U.S. Patent Application Pub. 2003/0172356 A1).

Ho et al. has been discussed above in regard to claims 1-5, 8, 10-11, 14, 16-19, 21-22, 24-25, 26, 28 and 30. The difference between Ho et al. and the claimed invention is that Ho et al. does not teach a centralized management system. However, centralized management of distributed database is well known in the art. For example, Pulkkinen et al. teaches centralized management of a distributed database (see paragraph [0012]. One of ordinary skill in the art would have been motivated to combine the teaching of Pulkkinen et al. with the WDM network of Ho et al. because centralized management coordinates the local databases to ensure their consistency and provides powerful computation power that is shared among local databases. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a centralized management system for maintaining local database of each node, as taught by Pulkkinen et al., in the WDM network of Ho et al. because centralized management coordinates the local databases to ensure their consistency and provides powerful computation power that is shared among local databases.

6. Claims 31-34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ho et al. (P. Ho et al., "A Novel Distributed Control Protocol in Dynamic Wavelength-Routed Optical Networks", IEEE Communications Magazine, November 2002) in view of Sichani et al. (A. Sichani et al., "A Novel Distributed Progressive Reservation Protocol for WDM All-Optical Networks", IEEE International Conferences on Communication, ICC '03, 11-14 May 2003).

Ho et al. has been discussed above in regard to claims 1-5, 8, 10-11, 14, 16-19, 21-22, 24-25, 26, 28 and 30. Regarding claim 31, the difference between Ho et al. and the claimed

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invention is that it may not be clear from Ho et al. how the source node communicates with other access nodes on the selected path to setup the path. Sichani et al. teaches in FIG. 1 backward reservation protocol. One of ordinary skill in the art would have been motivated to combine the teaching of Sichani et al. with the WDM network of Ho et al. because the backward reservation protocol reduces unused bandwidth. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a backward reservation protocol for setup the lightpath, as taught by Sichani et al., in the WDM network of Ho et al. because the backward reservation protocol reduces unused bandwidth.

Regarding claims 32-33, Ho et al. teaches on page 38, right col., last paragraph lightpath.

Regarding claim 34, Ho et al. teaches dynamic path selection.

Regarding claim 36, Ho et al. teaches in FIG. 3 that the database includes the status of each wavelength.

7. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ho et al. and Sichani et al. as applied to claims 31-34 and 36 above, and further in view of Golmie et al. (N. Golmie et al., "A Differentiated Optical Services Model for WDM Networks", IEEE Communications Magazine, February 2000).

Ho et al. and Sichani et al. have been discussed above in regard to claims 31-34 and 36. The difference between Ho et al. and Sichani et al. and the claimed invention is that Ho et al. and Sichani et al. do not teach dividing optical network into QoS levels. Golmie et al. teaches in FIG. 3 and Table 1 to divide optical links into channels according to a plurality of service levels. One of ordinary skill in the art would have been motivated to combine the teaching of Golmie et al. with the WDM network of Ho et al. and Sichani et al. because different service levels fulfill

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different customer needs. For example, certain customers are willing to pay premier charge for high quality service. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to divide the network into a plurality of service levels, as taught by Golmie et al., in the WDM network of Ho et al. and Sichani et al. because different service levels fulfill different customer needs.

8. Claims 37-40 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ho et al. and Sichani et al. as applied to claims 31-34 and 36 above, and further in view of Freeman ("Telecommunication System Engineering" by R. Freeman, John Wiley & Sons, 1980, pp 99-103).

Ho et al. and Sichani et al. have been discussed above in regard to claims 31-34 and 36. The difference between Ho et al. and Sichani et al. and the claimed invention is that Ho et al. and Sichani et al. do not teach a machine-readable medium. Freeman teaches in Section 12 stored-program control (SPC). Freeman teaches in p. 100 to store method steps as program in memory for providing instructions to a controller or computer. One of ordinary skill in the art would have been motivated to combine the teaching of Freeman with the modified WDM network of Ho et al. and Sichani et al. because SPC is flexible and expandable such that it is easy to upgrade the system by rewriting the program. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use SPC and store program in machine-readable medium, as taught by Freeman, in the modified WDM network of Ho et al. and Sichani et al. because SPC is flexible and expandable such that it is easy to upgrade the system by rewriting the program.

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9. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ho et al., Sichani et al. and Freeman as applied to claims 37-40 and 42 above, and further in view of Golmie et al. (N. Golmie et al., "A Differentiated Optical Services Model for WDM Networks", IEEE Communications Magazine, February 2000).

Ho et al., Sichani et al. and Freeman have been discussed above in regard to claims 31-34 and 36. The difference between Ho et al., Sichani et al. and Freeman and the claimed invention is that Ho et al., Sichani et al. and Freeman do not teach dividing optical network into QoS levels. Golmie et al. teaches in FIG. 3 and Table 1 to divide optical links into channels according to a plurality of service levels. One of ordinary skill in the art would have been motivated to combine the teaching of Golmie et al. with the WDM network of Ho et al., Sichani et al. and Freeman because different service levels fulfill different customer needs. For example, certain customers are willing to pay premier charge for high quality service. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to divide the network into a plurality of service levels, as taught by Golmie et al., in the WDM network of Ho et al., Sichani et al. and Freeman because different service levels fulfill different customer needs.

Response to Arguments

10. Applicant's arguments filed 6 November 2006 have been fully considered but they are not persuasive.

The Applicant argues on page 14 that Ho's routing table is defined offline and does not teach or suggest that the optical nodes build or maintain the routing table. The Examiner disagrees. Ho teaches on page 39, right col., first paragraph "each source node is provided with a routing table, in which the alternate paths to all its destinations are defined offline." (emphasis

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added) That is, the routing table resides in the source node. Ho then teaches in the second paragraph that the source periodic probes each potential destination to gather dynamic link state along the alternate paths to determine costs which are used for routing decision. Ho teaches that the paths are defined offline. However, the cost of each path is built and maintained by the source. That is, certain components (e.g., alternate paths) of the routing table may be defined offline, the whole routing table is put together in the source node and maintained by the source node. This reads on the claim.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

skl
2 January 2007



Shi K. Li
Primary Patent Examiner